

# Inkyu Shin | Curriculum Vitae

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I am a Research Scientist at ByteDance / TikTok. I received Ph.D. degree in future vehicle from the Korea Advanced Institute of Science and Technology (KAIST), where I was co-advised by Prof. Kuk-Jin Yoon and Prof. In So Kweon. I earned my B.S and M.S degrees in automotive engineering from Hanyang University (HYU) and KAIST in 2019 and 2021. I interned at NEC Laboratories America, Inc, San Jose, CA (with Dr. Yi-Hsuan Tsai), Google Research (with Dr. Liang-Chieh Chen and Dr. Jun Xie) and recently have engaged in a research internship at ByteDance/TikTok.

## Research Interests

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My research is dedicated to establishing a robust foundation in the field of computer vision. This endeavor focuses on pioneering advancements in beyond or human-level visual **generation** and **recognition**, while pursuing the **data-efficiency** for generalizability. Specifically, I am interested in the following research topics:

- **Learning for Visual Generation**  
Video Generation / Editing
- **Learning for Visual Recognition**  
Image Segmentation  
Video Segmentation  
Multiple Object Tracking  
Multiple Camera Tracking
- **Learning for Data-efficiency**  
Learning from Simulation  
Domain Adaptation  
Unsupervised Learning  
Self-supervised Learning

but also open to other explorable/challenging domains.

The ultimate purpose of this research is to apply to a variety of applications (e.g., AI Filmmaking, Autonomous driving, Robot Navigation, AR/VR).

## Research Experience

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- **ByteDance / TikTok** **San Jose, CA**  
*Research Scientist* *Aug 2024 - Current*
- **ByteDance / TikTok** **San Jose, CA**  
*Research Intern, Mentors: Liang-Chieh Chen and Qihang Yu* *Sep 2023 - Jan 2024*  
- Topic: Video Generation / Editing
- **Google Research** **LA, CA (virtual)**  
*Student Researcher Intern, Mentors: Liang-Chieh Chen and Jun Xie* *May 2022 - April 2023*  
- Topic: Video Recognition / Tracking
- **NEC Laboratories America, Inc** **San Jose, CA (virtual)**  
*Research Intern, Mentor: Yi-Hsuan Tsai* *May 2021 - Aug 2021*  
- Topic: Test-time Adaptation

- **Korea University**  
Research Intern, Supervisor: Jaegul Choo  
- Topic: Image-to-Image Translation

**Seoul, Korea**  
Sep 2018 - Dec 2018

## Education

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- **Korea Advanced Institute of Science and Technology (KAIST)** **Daejeon, Korea**  
Future Vehicle Ph.D. degree, Co-Advisors: Kuk-Jin Yoon and In So Kweon  
2021–2024
- **Korea Advanced Institute of Science and Technology (KAIST)** **Daejeon, Korea**  
Future Vehicle M.S degree, Advisor: In So Kweon  
2019–2021  
Master's Thesis: Learning to Scale the Labels for Self-training based Domain Adaptation
- **Hanyang University (HYU)** **Seoul, Korea**  
AUTOMOTIVE ENGINEERING B.S degree  
2013–2019

## Publications

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(C: conference / J: journal / P: preprint / \* :equal contributions)

- **[P3] Enhancing Temporal Consistency in Video Editing by Reconstructing Videos with 3D Gaussian Splatting**  
**Inkyu Shin**, Qihang Yu, Xiaohui Shen, In So Kweon, Kuk-Jin Yoon, Liang-Chieh Chen  
arXiv, 2024
- **[C14] MTMMC: A Large-Scale Real-World Multi-Modal Camera Tracking Benchmark**  
Sanghyun Woo\*, Kwanyong Park\*, **Inkyu Shin\***, Myungchul Kim\*, In So Kweon  
Computer Vision and Pattern Recognition (**CVPR**), 2024
- **[C13] Video-kMaX: A Simple Unified Approach for Online and Near-Online Video Panoptic Segmentation**  
**Inkyu Shin**, Dahun Kim, Qihang Yu, Jun Xie, Hong-Seok Kim, Bradley Green, In So Kweon, Kuk-Jin Yoon, Liang-Chieh Chen  
Winter Conference on Applications of Computer Vision (**WACV**), 2024 (Oral)  
- Also presented at "Transformer For Vision" Workshops in conjunction with "**CVPR**", 2023
- **[C12] MATE: Masked Autoencoders are Online 3D Test-Time Learners**  
Muhammad Jehanzeb Mirza\*, **Inkyu Shin\***, Wei Lin\*, Andreas Schriebl, Kunyang Sun, Jaesung Choe, Horst Possegger, Mateusz Kozinski, In So Kweon, Kuk-Jin Yoon, Horst Bischof  
International Conference on Computer Vision (**ICCV**), 2023
- **[C11] TTA-COPE: Test-Time Adaptation for Category-Level Object Pose Estimation**  
Taeyeop Lee, Jonathan Tremblay, Valts Blukis, Bowen Wen, Byeong-Uk Lee, **Inkyu Shin**, Stan Birchfield, In So Kweon, Kuk-Jin Yoon  
Computer Vision and Pattern Recognition (**CVPR**), 2023
- **[C10] Bidirectional Domain Mixup for Domain Adaptive Semantic Segmentation**  
Daehan Kim\*, Minseok Seo\*, Kwanyong Park, **Inkyu Shin**, Sanghyun Woo  
Association for the Advancement of Artificial Intelligence (**AAAI**), 2023
- **[C9] Learning Classifiers of Prototypes and Reciprocal Points for Universal Domain Adaptation**  
Sungsu Hur, **Inkyu Shin**, Kwanyong Park, Sanghyun Woo, In So Kweon  
Winter Conference on Computer Vision (**WACV**), 2023

- **[C8] Moving from 2D to 3D: volumetric medical image classification for rectal cancer staging**  
Joohyung Lee\*, Jieun Oh\*, **Inkyu Shin**, You-sung Kim, Dae Kyung Sohn, Tae-sung Kim, In So Kweon  
Medical Image Computing and Computer Assisted Intervention (**MICCAI**), 2023
- **[C7] MM-TTA: Multi-Modal Test-Time Adaptation for 3D Semantic Segmentation**  
**Inkyu Shin**, Yi-Hsuan Tsai, Bingbing Zhuang, Samuel Schulter, Buyu Liu, Sparsh Garg, In So Kweon, Kuk-Jin Yoon  
Computer Vision and Pattern Recognition (**CVPR**), 2022  
- Received *Qualcomm Innovation Award 2022*.
- **[C6] UDA-COPE: Unsupervised Domain Adaptation for Category-level Object Pose Estimation**  
Taeyeop Lee, Byeong-Uk Lee, **Inkyu Shin**, Jaesung Choe, Ukcheol Shin, In So Kweon, Kuk-Jin Yoon  
Computer Vision and Pattern Recognition (**CVPR**), 2022
- **[P2] Unsupervised Domain Adaptation for Video Semantic Segmentation**  
Kwanyong Park\*, **Inkyu Shin**\*, Sanghyun Woo, In So Kweon  
**arXiv**, 2021
- **[C5] LabOR: Labeling Only if Required for Domain Adaptive Semantic Segmentation**  
**Inkyu Shin**, Dong-Jin Kim, Jae Won Cho, Sanghyun Woo, Kwanyong Park, In So Kweon  
International Conference on Computer Vision (**ICCV**), 2021 (**Oral**)  
- Received *Qualcomm Innovation Award 2021*.
- **[P1] Learning Representations by Contrasting Clusters While Bootstrapping Instances**  
Junsoo Lee, Hojoon Lee, **Inkyu Shin**, Jaekyoung Bae, In So Kweon, Jaegul Choo  
**arXiv**, 2020
- **[C4] Discover, Hallucinate, and Adapt: Open Compound Domain Adaptation for Semantic Segmentation**  
Kwanyong Park, Sanghyun Woo, **Inkyu Shin**, In So Kweon  
Conference on Neural Information Processing Systems (**NeurIPS**), 2020  
- Received *Qualcomm Innovation Award 2021*.
- **[C3] Two-phase Pseudo Label Densification for Self-training based Domain Adaptation**  
**Inkyu Shin**, Sanghyun Woo, Fei pan, In So Kweon  
European Conference on Computer Vision (**ECCV**), 2020  
- Also presented at "Visual Learning with Limited Labels" Workshops in conjunction with (**CVPR**), 2020
- **[C2] Unsupervised Intra-domain Adaptation for Semantic Segmentation through Self-Supervision**  
Fei pan, **Inkyu Shin**, Francois Rameau, Seokju Lee, In So Kweon  
Computer Vision and Pattern Recognition (**CVPR**), 2020 (**Oral**)  
- Received *Qualcomm Innovation Award 2020*.
- **[C1] Image-to-Image Translation via Group-wise Deep Whitening-and-Coloring Transformation**  
Wonwoong Cho, Sungha Choi, David Keetae Park, **Inkyu Shin**, Jaegul Choo  
Computer Vision and Pattern Recognition (**CVPR**), 2019 (**Oral**)

## Professtional Activities

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Conference Reviewer

- CVPR (2022~), ICCV (2023~), NeurIPS (2021~), ICML (2022~)

## Awards

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- 2022: Qualcomm Innovation Award
- 2021: Qualcomm Innovation Award
- 2020: Qualcomm Innovation Award

## IT Skills

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- Languages: Python, MATLAB, C, LATEX
- Libraries: PyTorch, TensorFlow

## Military Service

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- KATUSA at 8th Army, U.S. Army
  - Discharged as a Sergeant
  - Graduated WLC (Sergeant School of U.S. Army) as 7th in rank

## References

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- **Prof. In So Kweon**  
Relationship: M.S & Ph.D Advisor  
Professor, Electrical Engineering, KAIST  
Email: iskweon77@kaist.ac.kr
- **Prof. Kuk-Jin Yoon**  
Relationship: Ph.D Advisor  
Professor, Mechanical Engineering, KAIST  
Email: kjyoon@kaist.ac.kr
- **Dr. Yi-Hsuan Tsai**  
Relationship: Internship mentor at NEC Laboratories America, Inc.  
(Previous) Research scientist, NEC Laboratories America, Inc.  
(Current) AI/ML Tech Lead Manager, Google  
Email: wasidennis@gmail.com
- **Dr. Liang-Chieh Chen**  
Relationship: Internship mentor at Google Research and ByteDance  
(Previous) Research scientist, Google Research  
(Current) Research scientist, ByteDance  
Email: lcchen@cs.ucla.edu